AUGUST 27, 1984
CHEMICAL & ENGINEERING

Chicago museum exhibits "Everyday Chemistry"
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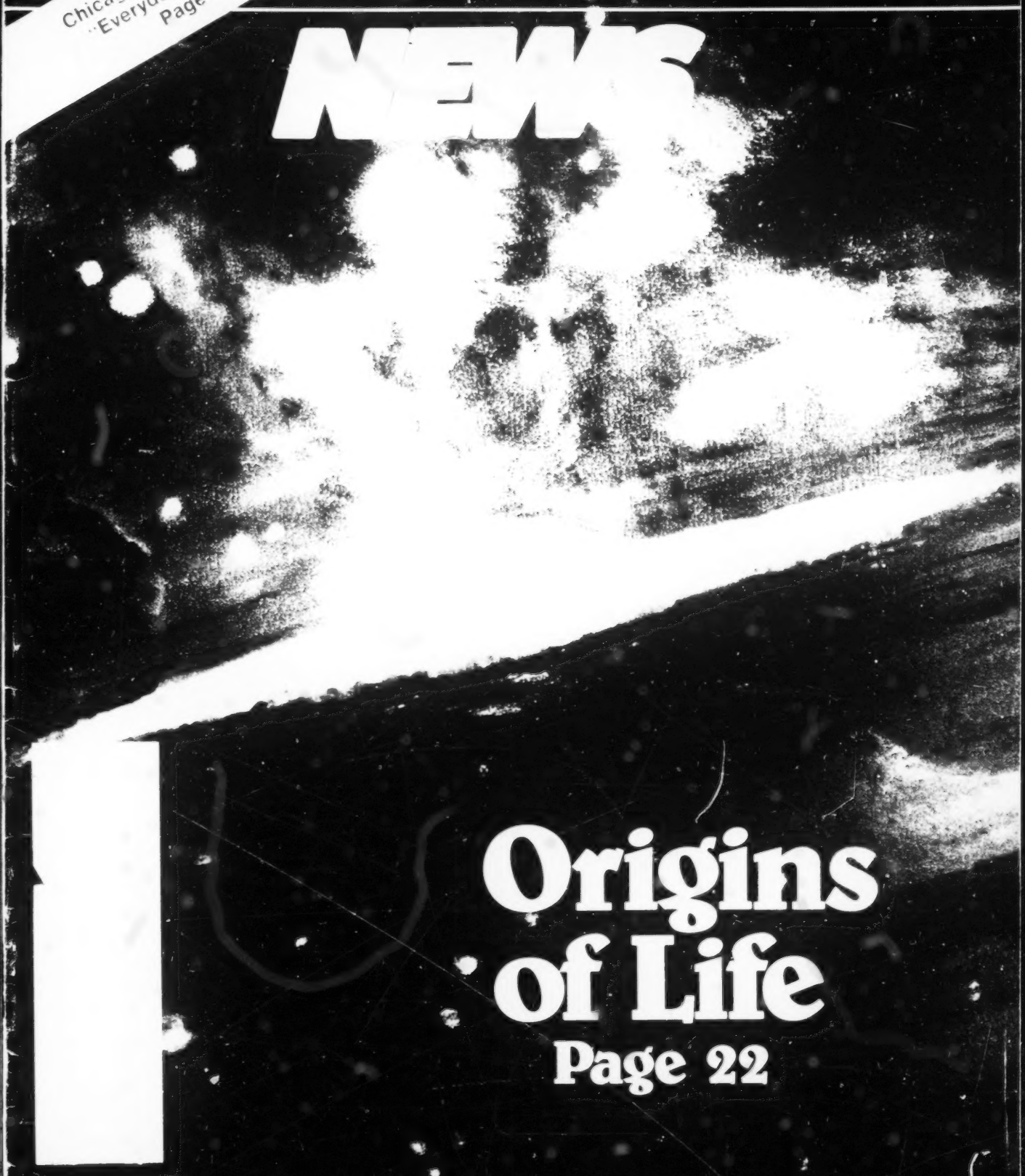
NEWS



Origins of Life

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CHEMICAL & ENGINEERING
NEWS
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AUGUST 27, 1984

News of the Week

■ **EPA begins two-year study of toxic substances in California's Santa Clara Valley.** **Page 3**

■ **ICSU committee recommends 100-year wait before disposing of nuclear wastes permanently.** **Page 3**

■ **ICI offers consulting service to improve energy efficiency in process plants.** **Page 4**

■ **New technique improves efficiency of human monoclonal antibody production.** **Page 4**

■ **Foreign gene has been expressed in soybean cells transformed by recombinant DNA technique.** **Page 5**

■ **Chemistry olympiad medalist Seth Brown honored in Pittsburgh.** **Page 5**

Cover: Cloud of interstellar dust and gas from which our solar system was formed is illuminated by the newly formed sun in painting by John A. Wood, Center for Astrophysics, Harvard College Observatory

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Business

U.S. pharmaceutical firms raised profits 13% in the second quarter over 1983; pigmented plastics costs will rise. **Page 9**

International Business

Union Carbide Europe boosted earnings by dropping petrochemicals to concentrate on specialty, service-oriented markets. **Page 11**

Government

Congress worked on a number of appropriations, environment, and patent bills during session between conventions. **Page 14**

Education

Chemistry exhibit at Chicago's Museum of Science & Industry shows basic principles in everyday use, hands-on experiments. **Page 18**

Science

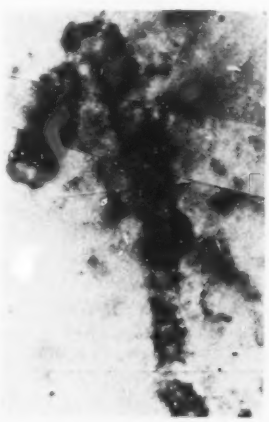
Beilstein Handbook of Organic Chemistry will go on line in 1987, supplementary series will switch from German to English. **Page 20**

Science Issues

American Scientific Affiliation aims to resolve conflicts between science and Christianity, humanize science and society. **Page 36**

Books

"The Man-Made Sun" details pressure, controversy, and politics behind the development of fusion power in the U.S. **Page 39**



Special Report

From an understanding of how the solar system was formed, scientists have determined the conditions under which life probably originated on Earth and, by experiment, have demonstrated a number of possible theories. **Page 22**

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LETTERS

Methanol in the fuel market

SIR: Congratulations on your recent article on methanol in the fuel market which appeared in the July 16 issue, page 9. I think it is by far the most accurate and concise summation of the business conditions surrounding this industry that I have read to date.

United American Fuels has sold millions of gallons of methanol blends into the fuel market since the company was started in April 1983. Our experience has been that the product has received far more positive comments and responses from our customers, as well as their customers, than negative feedback. This condition exists in spite of negative publicity which is touted by some major oil companies in full-page ads pointing out the negative aspects of the product. Proper blending, coupled with rigid quality control and station preparation, can and has overcome these negative aspects.

I think the fact that sales remain healthy is the best testimonial to the efficacy of the product. If it were not well received, our free enterprise system would have ensured its demise long ago.

John P. Simion, *President*
United American Fuels, Phoenix

Another look at creationism

SIR: I have not read "Science and Creationism" edited by Ashley Montagu and have little intention to do so. I have read, however, the book review by Rudy M. Baum, your West Coast Bureau Head (C&EN, July 9, page 41), and note that, while he is not fully satisfied with the hatchet job done on Mr. Montagu in respect to organization of the material, his views on creationism are equally one-sided.

Fortuitously I was not around at the time of the "Big Bang" and the "Creation," but neither was Montagu nor your Baum. Over the years I have studied the writing of innumerable authorities of biology, cosmology, religion, philosophy, history, and anthropology on the origin of life. I realize that there have been dozens of varying and often conflicting theories ranging from thick primordial broths, devoid of any guiding hand, to an all-encompassing knowing creator. Unfortunately, in addition to Montagu, your Baum, and me, none of the thousands of great thinkers of the past were around e ther when the "Big Bang" happened and life started. We and our heirs, therefore, will have to continue speculating, theorizing, and conjecturing how it all came about.

In the meantime, I turn with disgust from the smug cocksureness of Montagu as well as of your reviewer who, by ignorance or design, tend to rebuke and vilify the great thinkers of the past, including the founding fathers of this republic, who worshipped or at least believed in some form of a supreme creator.

I also question the wisdom of C&EN in prominently featuring biased reviews of a biased book on a controversial subject, such as creationism. All C&EN can expect is to antagonize either the convictions of the agnostic or being insensitive to the metaphysical beliefs of many members of the American Chemical Society.

Silve Kallmann
Research Director
Ledoux & Co., Teaneck, N.J.

For a balanced viewpoint

SIR: I have been meaning to write to you for some time on what I perceive to be an imbalance in the editorial treatment on the general atomic question; specifically, however, to the question of the "comprehensive test ban."

I refer to the June 4, 1984, issue of *Chemical & Engineering News*, which included your editorial and the letter from the two Soviet scientists. As a longtime member of the American Chemical Society, I decry this prejudice and feel that if it is going to be discussed, as indeed it should, it also should present a balanced viewpoint. We cannot remain free, unless we remain strong.

Paul W. Tucker
Phillips Petroleum, Bartlesville, Okla.

Corrections

- May 7, page 21: Badische also is a merchant supplier of caprolactam in the U.S.
- June 11, page 42: Exxon's chemical sales in 1983 were $7.69 billion, up 6% from 1982 and representing 8.1% of the company's total sales. Chemical operating profit was $376 million, up 700% from 1982, and 3.9% of the total. Identifiable chemical assets were $5.30 billion, or 8.4% of the corporate total. Chemical operating profit margin for 1983 was 4.9% and operating return on chemical assets was 7.1%.
- Aug. 6, page 25: The captions for the upper right and lower left micrographs in the box were transposed; the upper right micrograph is of fumed silica, the lower left micrograph is of titanium dioxide.

Drug Company Earnings Rose 13% in Second Quarter

But strength of U.S. dollar overseas plus increasing cost consciousness in health care market has continued to cut into profits

Hindered by the continuing strength of the U.S. dollar against other currencies and growing cost consciousness on the part of hospital purchasing agents, major U.S. pharmaceutical companies still raised their profits 13% overall in this year's second quarter over a year before.

A group of 17 diversified drug concerns with other business lines ranging from medical devices to specialty chemicals managed the earnings increase on a 6% rise in revenues, the same growth registered in the first quarter. The group's overall profit margin—net income as a percentage of sales—jumped to 10.9% from 10.2% in last year's second quarter.

Individual results varied widely, however, making it difficult to discern broad trends. At some companies, for instance, ethical drug sales rose strongly, whereas at others they slipped. The same variety was evident in the medical products sector, suggesting differing degrees of success on the part of producers struggling to cope with the changing realities of the health care market.

For the most part, though, earnings statements focused on the effects of the powerful dollar. Becton Dickinson, for example, rebounded from a $17.9 million loss in second-quarter 1983 to record a $15.4 million profit in this year's quarter. But the company points out that if exchange rates had remained unchanged from the previous year, sales would have been $4 million higher and net income 6 cents per share, or $1.3 million (8.4%), higher than they were. Pfizer, which reported a 7% revenue rise, says sales were up 10% on a local currency basis. A. H. Robins estimates that unfavorable foreign exchange rates reduced its sales $5 million and earnings $1.3 million in the second quarter. And Warner-Lambert, which earned $61.9 million in the quarter, says that the dollar's strength cut 4 cents per share, or $3.2 million (5.2%), from its net income.

Foreign exchange rates are particularly important to pharmaceutical companies, because typically a very large portion of their sales volume is transacted overseas. For example, 26% of Becton Dickinson's sales were

Profitability increased for most pharmaceutical firms

	SECOND-QUARTER 1984						FIRST-HALF 1984					
	Sales	Earnings[a]	Change from 1983		Profit margin[b]		Sales	Earnings[a]	Change from 1983		Profit margin[b]	
Company	($ millions)		Sales	Earnings	1984	1983	($ millions)		Sales	Earnings	1984	1983
Abbott Labs	$ 801.4	$100.4	11%	17%	12.5%	11.93%	$1522.5	$188.1	8%	17%	12.4%	11.5%
American Home Products	1198.5	158.3	4	11	13.2	12.4	2457.5	331.1	5	10	13.5	12.8
Avon Products	816.3	48.1	9	3	5.9	6.2	1541.9	77.7	6	3	5.0	5.2
Becton Dickinson	279.9	15.4	−1	def	5.5	def	565.6	29.0	−2	def	5.1	def
Bristol-Myers	1060.1	111.1	10	17	10.5	9.9	2116.0	221.1	10	18	10.4	9.7
Eli Lilly	723.9	114.0	−2	12	15.7	13.8	1618.7	260.7	3	9	16.1	15.1
Merck	891.3	131.4	8	7	14.7	15.0	1739.9	256.5	9	8	14.7	14.9
Pfizer	985.7	118.1	7	11	12.0	11.6	1905.5	245.8	4	12	12.9	11.9
Revlon	578.8	30.9	−1	3	5.3	5.1	1142.8	55.4	0	3	4.8	4.7
A. H. Robins	152.0	4.1	11	−70	2.7	9.9	308.3	20.0	13	−31	6.5	10.7
Schering-Plough	475.6	47.9	2	−5	10.1	10.8	962.1	101.2	3	−4	10.5	11.3
G. D. Searle	323.6	38.4	53	102	11.9	9.0	603.9	63.7	47	79	10.5	8.7
SmithKline Beckman	713.5	120.2	3	4	16.8	16.6	1432.3	250.7	4	4	17.5	17.6
Squibb	440.6	47.1	3	17	10.7	9.4	869.5	84.0	4	14	9.7	8.8
Sterling Drug	456.2	30.7	−2	7	6.7	6.2	903.2	60.9	−1	8	6.7	6.2
Upjohn	581.7	47.6	12	8	8.2	8.5	1144.7	112.7	14	26	9.8	8.9
Warner-Lambert	797.2	61.9	2	12	7.8	7.1	1574.6	116.1	2	14	7.4	6.6

a Excludes significant extraordinary and nonrecurring items. b After-tax income as a percentage of sales. def = deficit.

outside the U.S. in the second quarter. In 1983, 48% of Pfizer's sales came in its foreign business areas. For Robins, 1983 overseas sales accounted for 38% of all revenues.

As in the first quarter, G. D. Searle turned in the largest growth in earnings—up 102% from second-quarter 1983. And as before, Searle's performance derived its remarkable vitality from worldwide sales of its aspartame products, which accounted for 49% of the company's revenues in April, May, and June. The greatest decline in net earnings among the 17 firms fell to Robins, which was forced to pay out $15.3 million for litigation related to its Dalkon Shield contraceptive product. The net drop in profits was particularly galling to Robins in the second quarter, which featured a company sales record for the period and a 36% increase in operating earnings.

The second best earnings gains were achieved by Abbott Laboratories, Bristol-Myers, and Squibb, each with a 17% increase over second-quarter 1983. Abbott had record sales and earnings for the quarter, thanks to a 7% rise in pharmaceutical and nutritional products sales and a 10% increase in hospital and laboratory products sales.

Squibb reported a 1% increase in pharmaceutical sales, a slight gain in medical products sales, and a 15% jump in personal care sales by the company's Charles of the Ritz group. "The corporation's earnings progress for the year 1984 is tracking earlier expectations," chief executive Richard M. Furland says.

The most profitable firm in the group remained SmithKline Beckman, with a 16.8% profit margin. The company's net earnings increased only 4% during the quarter, but earnings per share jumped 7.9%. The disparity is accounted for by the firm's stock repurchase program, which reduced the total of outstanding shares of common stock about 3.3 million during the first half of 1984. The company also was helped by a sizable cut in its annual tax rate, thanks to recent tax legislation.

David Webber, New York

Higher costs in store for pigmented plastics

U.S. polyethylene processors can expect resin prices to decline during the 1980s, but prices for titanium dioxide and carbon black to compound with them will rise. The overall result will be increased costs of black- and white-pigmented polyethylene. These conclusions were aired last week at a press conference in New York City by two executives in the plastics industry.

Present worldwide polyethylene overcapacity, planned new capacity over the next four years, and needs of such oil- and gas-rich countries as Canada and Saudi Arabia to export will combine to depress U.S. prices, says Rolland G. Frakes, senior vice president at Novacor Chemicals, Calgary, Alta. These price drops in the U.S. and in potential export markets in the Pacific rim will cause plant shutdowns here, he adds, leading the U.S. to become a net polyethylene importer.

Moreover, Frakes says, linear low-density polyethylene (LLDPE) will slowly take over many U.S. high- and low-density polyethylene (HDPE and LDPE) markets, forcing shutdowns of some LDPE plants here and conversion of older HDPE plants to LLDPE. About 3.8 billion lb of new LLDPE capacity will start up over the next few years. Conversions of U.S. HDPE plants to LLDPE could grow from 4.4 billion lb in 1984 to 11 billion lb in 1988.

Taking up the subject of pigments used in polyethylene and other resins, Howard England, vice president for manufacturing at Ampacet Corp., Mt. Vernon, N.Y., says, "In our business, there is a relatively unpublicized problem involving two important raw materials, titanium dioxide and carbon black. They represent the largest volume of pigmented consumption in the plastics industry."

He says that current shortages and price rises for TiO_2 and carbon black came out of plant shutdowns for economic and environmental reasons in the recent recession. Ampacet makes resin concentrates. Suppliers of these most-used plastic pigments thus were caught short by the unexpected strength of economic recovery worldwide. As a result, prices for TiO_2 have risen 17% during 1984, and those for carbon black 32%. These increases more than offset resin price declines, England says, putting concentrates producers in a squeeze.

Moreover, this tight situation in price and supply for these pigments will persist for the next few years, England predicts. In the case of TiO_2, a plant takes four years to build, and no new capacity has been announced. The Ampacet executive estimates U.S. 1984 TiO_2 demand at 1.9 billion lb, compared with 1.75 billion lb of domestic effective capacity. Although 20% of U.S. TiO_2 needs are filled by imports, European economies also are growing, and competition for the white pigment will be sharp.

As for carbon black, England estimates 1984 U.S. demand at 2.95 billion lb and domestic effective capacity at 3.15 billion lb. He says that summer shutdowns in the rebounding auto industry have granted a respite from the tight supply situation. This is because 65% of U.S. carbon black production goes into tires, and 25% more into other rubber goods. However, producers again will be sold out this fall, he says.

Estimates from Columbian Chemicals Co., Akron, earlier this summer bear England out. Though production leaped 20% to 710 million lb in the first quarter of 1984 compared with the same period in 1983, Columbian analysts commented, inventories dwindled to 150 million lb, only a three-week supply. □

U.S. polyethylene supply to outpace demand

Billions of lb	1985 Supply	1985 Demand	1988 Supply	1988 Demand
Low-density polyethylene	6.7	4.8	6.2	4.7
Linear low-density polyethylene	3.5	2.8	4.0	4.2
High-density polyethylene[a]	6.8	5.7	7.4	6.7
TOTAL	17.0	13.3	17.6	15.6

[a] 2.5 billion to 3.0 billion lb of high-density polyethylene capacity could be switched to linear low-density polyethylene. **Source:** Novacor Chemicals